



# **COMMchoice2000™ COMMUNICATION SYSTEM**

## **OPERATION/SERVICE MANUAL**

The **COMMchoice2000™** Communication System was intended for small to medium communication areas, such as:

- ◆ warehouses;
- ◆ hospital operating rooms (where the system compliments sterile ventilation systems [hoods and drapes] worn during operations);
- ◆ recreational sporting events like paint ball games; and
- ◆ other close local proximity applications,

the **COMMchoice2000™** Communication System consists of:

- ◆ six (6) MOBILE TRANSCEIVERS
- ◆ one (1) BASE UNIT with full duplex VHF radio communications capability
- ◆ seven (7) HEADSET/BOOM MICs

### **FRONT PANEL FEATURES**

- ◆ FM (Frequency Modulation)
- ◆ AUX channel for one-to-one communication
- ◆ PBX handset phone jack
- ◆ Tape Recorder output RCA jack
- ◆ Background music input RCA jack
- ◆ 4 Pin latching/keyed headset connector
- ◆ Base Unit Headset earpiece Volume Control
- ◆ AUX/OFF/COM switch
- ◆ 8 pin mini DIN outlet
- ◆ IN/OUT Phone Audio Controls
- ◆ Input Power Coaxial Jack
- ◆ Power ON switch

### **REAR PANEL FEATURES**

- ◆ Detachable BNC Transmit Antenna
- ◆ Detachable BNC Receive Antenna
- ◆ Output Power High/Low Switch

### **BASE UNIT**

### **BENEFITS:**

Clear, high quality audio communication on main and auxiliary channels.  
 Private base to mobile communication channel.  
 Private telephone calls to mobile users.  
 Tape recorded dictation.  
 Offers background music as option to "party line".  
 Push button release with dual connection security for durable connectivity.  
 Base unit headset volume adjuster.  
 Switch control between modes in base headset.  
 Optional dual base unit configurations.  
 Base unit phone adjuster.  
 Power supply input.

### **BENEFITS**

Short and easy to manipulate for greater mobility.  
 Short, easily manipulated for greater mobility.  
 Transmitter output power adjustment.

**MOBILE UNIT**

**Front Panel FEATURES**

- ◆ Microphone ON/OFF (in/out) switch
- ◆ External 6 Volt Power cable jack
- ◆ 4 Pin latching/keyed headset connector
- ◆ Headset/BoomMIC
- ◆ Internal/External Battery
- ◆ Earphone lateral Clockwise Volume control

**BENEFITS**

- Audio Out Control at Mobile Unit
- Easy battery replacement.
- Push button release with dual connection security for durable connectivity.
- Crisp, clear delivery of audio/voice communication.
- Choice of battery configuration.
- Easy finger adjustment.

**Rear Panel FEATURES**

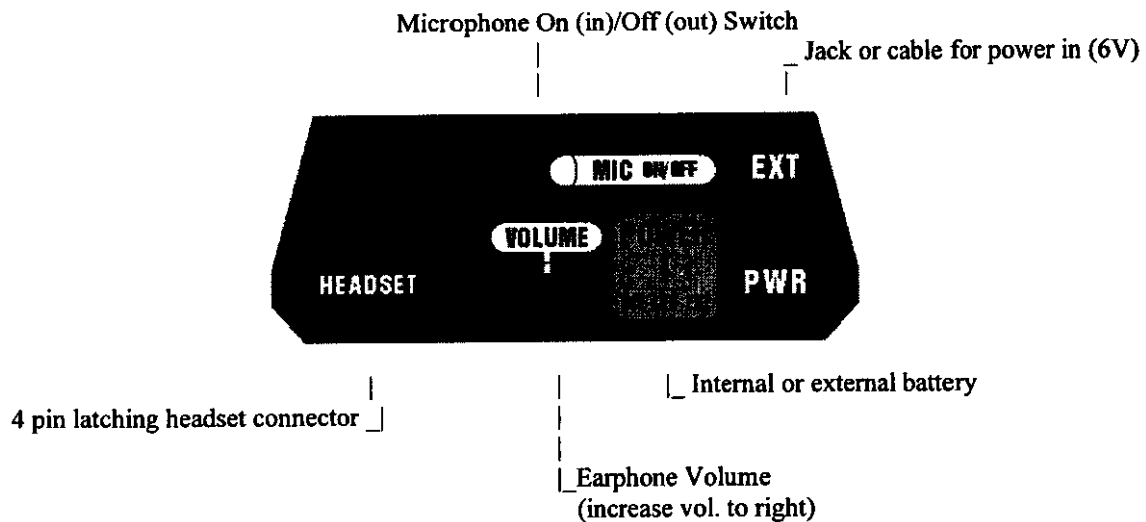
- ◆ Detachable BNC Transmit Antenna
- ◆ MICROPHONE output volume adjuster
- ◆ Detachable BNC Receive Antenna
- ◆ Output Power High/Low Switch

**BENEFIT**

- Short and easy to manipulate for greater mobility.
- Voice output control
- Short, easily manipulated for greater mobility.
- Transmitter output power adjustment.

**GRAPHIC PORTRAYAL OF FUNCTIONAL CONTROLS AND CONNECTIONS**

**MOBILE UNIT – Front Panel**



**MOBILE UNIT – Rear Panel**

Detachable Transmit Antenna (BNC) \_\_\_\_\_

\_\_\_\_\_ MIC loudness (clockwise = max.)

\_\_\_\_\_ Receive Antenna (BNC)



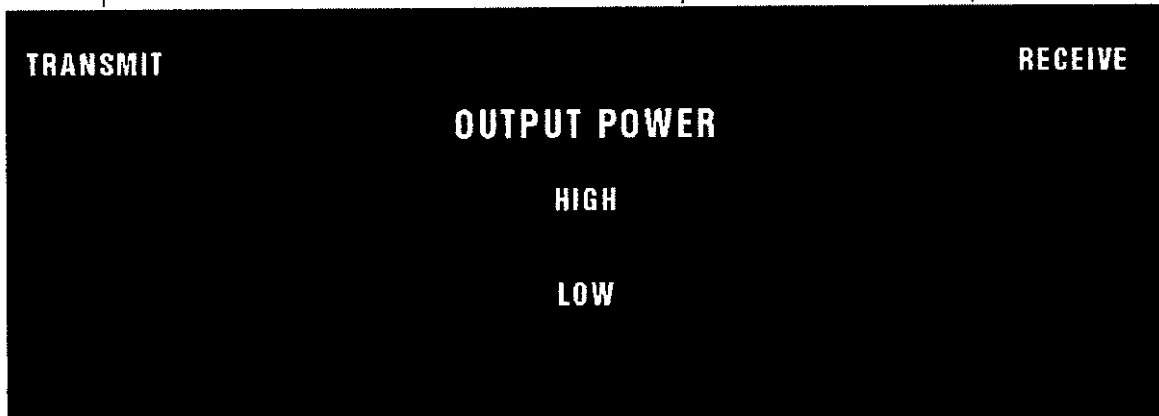
Two Position Transmitter output \_\_\_\_\_  
Power switch (LO is 1/2 HI)

**BASE UNIT – Rear Panel**

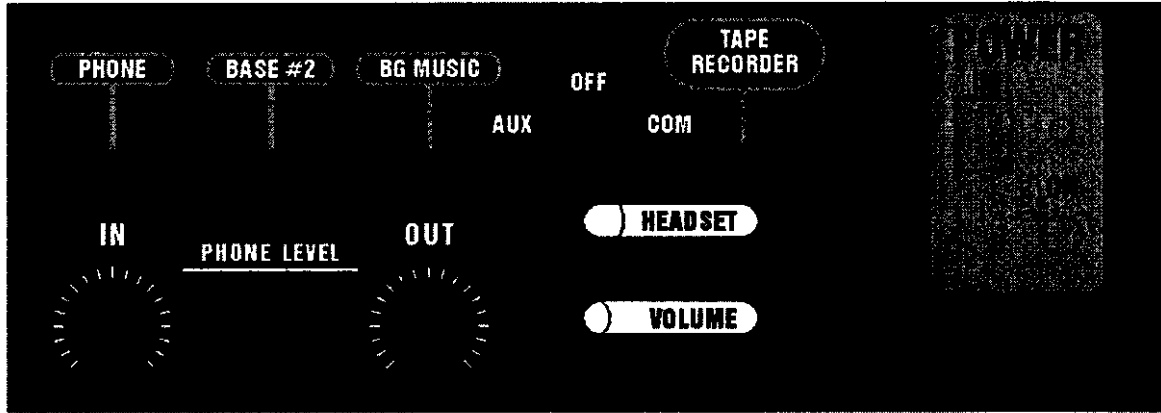
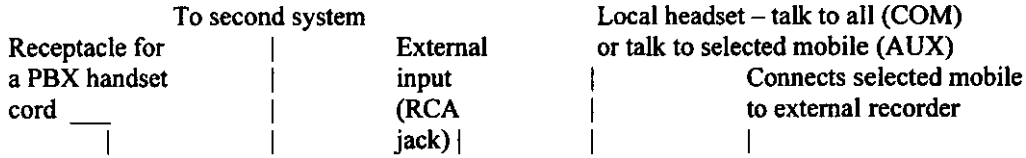
Detachable Transmit Antenna (BNC) \_\_\_\_\_

Two Position Transmitter output  
Power switch (LO is 1/2 HI)

\_\_\_\_\_ Receive Antenna (BNC)



**BASE UNIT --Front Panel**



Loudness adjustment IN (from) and OUT (to) The PBX handset line

Local earphone volume

Input power co-axial Jack & Power Switch

**PHONE** – This input is a four wire connection for a separate microphone and earphone, as are found in most PBX handsets. It is not compatible with an ordinary phone line.

**BASE #2** – This is an audio connection to another Base unit, allowing up to 12 Mobile units to be communicating with each other. The connector is an 8 pin Mini DIN.

**BG MUSIC** – Audio from an external source (with external level control) is transmitted to all Mobiles and can be monitored by the local headset in the “COM” position.

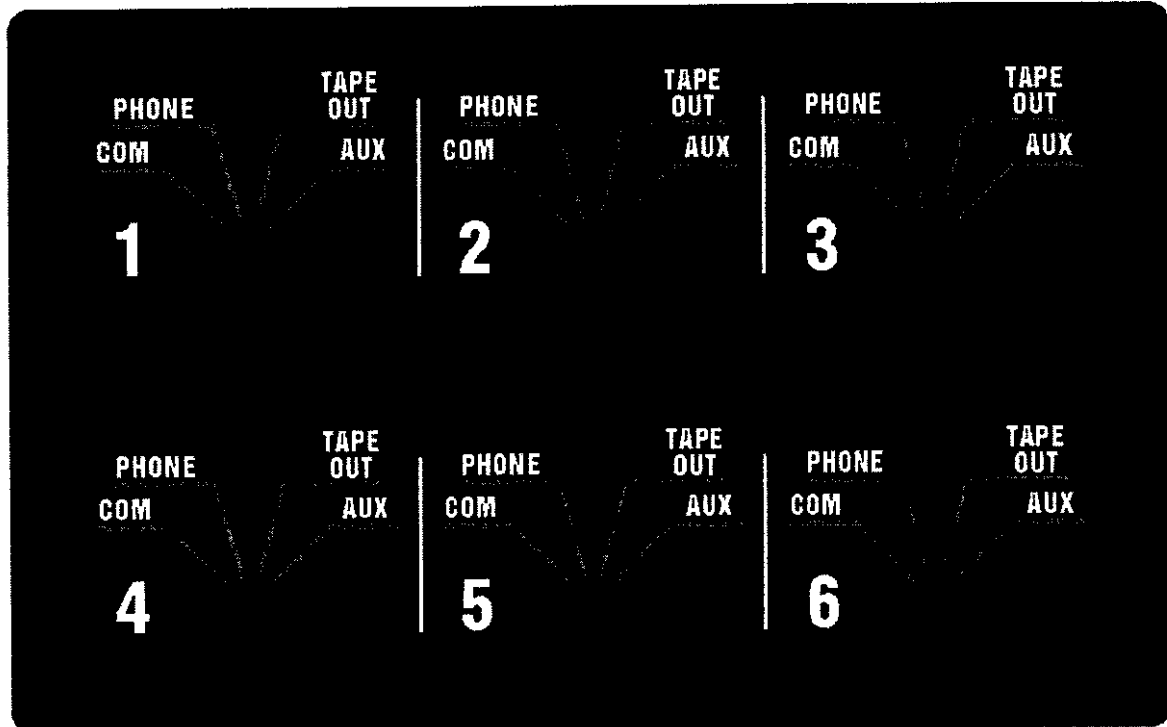
**TAPE RECORDER** – Audio from a selected mobile is routed to this connector (by the switches on top of the Base). The recorder should have a “record level” control, since the Base does not control the amplitude of this signal.

**POWER IN** – The Base requires 9 to 12 Volts DC at .5 Amperes.

**PHONE LEVEL**- These controls adjust the incoming and outgoing audio levels for optimum results at both ends of the telephone conversation. The person at the “far” end must be consulted for the best level.

**BASE UNIT – Top Label**

The switch numbers One through Six (1- 6) correspond to the Mobile unit numbers.



- ◆ The green LED above each switch, when on, indicates that the signal from the Mobile is being received correctly.
- ◆ When any switch is placed in a position other than "COM", the corresponding Mobile Unit is automatically switched to a sub-carrier mode of operation, which communicates **only** through the Base. Other mobiles cannot hear this one-to-one communication, in this sub-carrier mode.

**SWITCH POSITIONS:**

**COM** – Each Base receiver's audio is fed into the Base transmitter and is therefore re-transmitted to all mobile units. This is the "party line" mode of operation.

**PHONE** – The selected Mobile unit is connected to the PBX phone. Its received signal is connected to the two wires that normally would be the microphone connections of the PBX handset, therefore routing the Mobile Units audio into the 'phone system. The audio from the 'phone system is sent to the selected Mobile unit via a subcarrier frequency so that only this mobile can hear it.

**TAPE OUT** --Audio from the selected mobile is connected to the TAPE RECORDER RCA jack, rather than being re-transmitted. The Base can communicate with the selected mobile that is using the TAPE OUT mode when the base unit local headphone switch is in the AUX position.

**AUX** – The Base can communicate with the selected Mobile when the local headphone switch is in the AUX position.

## SET UP AND USE

### **BASE UNIT – SET UP**

**STEP #1** – The detachable (BNC connectors) antennas must not be installed randomly; as they are tuned (broadly, over a 10 MHz band) to the transmit and receive frequencies of the mobile unit. The markings must be observed when installing - i.e. the antenna and panel markings must be identical.

Connect the transmit and receive antennas. Note that the markings on the antennas match those on the rear panel. The antennas must, for best results be vertical to the earth. If the Base is wall mounted, the rear panel would be highest. Connect the antennas directly. With the Base on a table top, connect the antennas using a right angle BNC adapter.

**STEP #2** – Plug in the headset, set the volume to approximately half way, and set the headset selector to COM.

**STEP #3** – With the power switch to OFF, plug the Base power supply in. Check that all selector switches are in the COM position and turn the power switch to ON. All green LED's must be OFF (all Mobiles must be OFF).

**STEP #4** – Connect all other needed devices to the Base (BG Music, etc.).

### **MOBILE UNIT – SET UP**

**STEP #1** - Connect the transmit and receive antennas. Note that the markings on the antennas match those on the rear panel. The antennas must, for best results be vertical to the earth. The belt and holsters supplied with the system will support a good orientation.

**STEP #2** – Set the volume to about 1/3 up, and plug the headset in. Turn the rear panel MIC. LEVEL to maximum clockwise and set the OUTPUT POWER switch to HI.

**STEP #3** – Plug the battery in and push the power switch to EXT. The corresponding green LED on the Base should illuminate. Verify operation by talking to another party at the Base, or rub the foam mouthpiece cover on the microphones while listening at the “other end”.

Repeat for all Mobile Units.

## USE & OPERATING HINTS

Although these controls/connections are simple and fairly obvious, some elaboration is useful:

**ANTENNAS** – The antennas supplied for the Base will suffice for most applications. In order to keep from being in the way, the antennas for the Mobile Unit are intentionally short. Other antennas (for longer transmit/receive distances) are available. If the Base needs to be at one end of an area (containing the operating Mobile Units), directional antennas can be used on the Base. They will provide a significant increase in efficiency. For best range, keep the antennas away from conductive surfaces (metal walls, the human body, etc.).

**BATTERIES** – The supplied batteries are lead acid (gelcell). They have no “memory” effects, so should be recharged after use, even if the time of use is short (over 30 minutes). Lead acid batteries should never be left in a discharged state. They should be recharged every 3 to 4 months while in storage. The Mobile Unit has a low battery detector that generates clicks in the earphone. When this occurs, replace the battery within 10 to 15 minutes. The battery charger supplied with the system provides an optimum charging profile including an automatic “float charging mode” when the battery is fully charged. The battery can be left on the charger indefinitely.

**LOW SETTINGS**-- Set the Output Power to **LOW** when all the mobile units are close to the Base unit, and are close to each other to reduce unit to unit interference.

**MIC'S & EARPHONES** – To reduce system noise the MIC should be OFF if a user does not plan to talk. The sound level startup can be very loud. Reduce the volume before applying power. The MIC level should be reduced for users with unusually loud voices.

The microphones are noise-cancelling electrets which need an excitation voltage (supplied by the system). Substitute microphones may not operate properly. For best results, place the MIC approximately one thumb's thickness away from and to the side of the mouth. The user should speak firmly and clearly.

The earphones are 32 ohm dynamic elements in an open air configuration (the ear is not enclosed). The user can hear room sounds and background noise from the same ear used for the system. The ear phone should firmly contact the ear.

**MISCELLANEOUS** – The entire system uses a squelch tone scheme, wherein the transmitter emits a fixed frequency tone as well as the normal audio. The corresponding receiver has a circuit, which detects the tone and allows normal operation. At long range the tone becomes noisy and the detector loses it, at which point the detector shuts off (squelches) the received audio (noisy or not).

The green LED's on the Base are driven by the tone detector in each receiver. They are ON when the Mobile Unit is detected.

A FCC SITE LICENSE may be required to operate this unit.

### **TROUBLESHOOTING**

The **COMMchoice2000**™ Communication System was designed for stability over time and temperature. It uses surface mount construction for light weight ruggedness. There are no user replaceable or adjustable components inside the housings. The batteries will degrade in capacity over time and with recharge cycles. One to two years real time use should be expected.

**For Customer Service:** Call your Sales Representative or [1 800 44-DEVICES]

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